4.9. Solid Waste Management

Management Measure for Solid Waste:

Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

Management Measure Description

This management measure is focused on controlling the solid waste that can collect at marinas and boat ramp sites if waste receptacles are not provided and conveniently located, or sufficient attention is not given to controlling waste produced during boat cleaning, maintenance, and repair activities. Many of the management practices that are useful for reducing solid waste production during boat maintenance activities are discussed under the Storm Water Runoff management measure, since much of the solid waste produced during boat maintenance activities could potentially be carried to surface waters in storm water runoff. Please refer to the discussions of those management practices under the Storm Water Runoff management measure.

The purpose of the management measure is to prevent solid waste from polluting surface waters. Solid waste from boat cleaning, maintenance, and repair might contain harmful substances such as antifoulant paint chips or solvents used to clean or polish metal or wood parts. Solid waste from general activities and marina use, such as plastic bags, cups, cigarette butts, and food containers also pollutes surface waters and degrades the habitats of aquatic animals and plants. The simple act of picking up and properly disposing of trash goes a long way toward preventing this form of nonpoint source pollution.

Marinas that appear clean because litter is not a visual problem are also more attractive to customers when they are shopping for a place to dock their boat or when it comes time to sign a new slip rental lease. Cleanliness at a marina can also lead to public recognition and to fewer complaints about flat tires or floating trash in slips. Substantial clean-up costs can be replaced by small initial investments in trash collection and preventive practices (Figure 4.15). The investment in some clean marina practices can be recovered by renting equipment such as dustless sanders, or selling items such as filter cloth to boat owners.

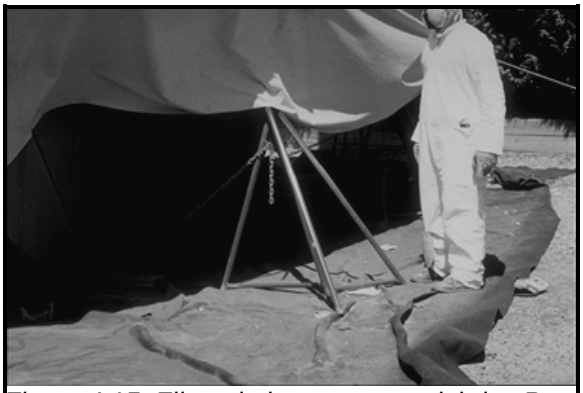

Figure 4.15. Filter cloths to capture debris. Port Annapolis Marina (Maryland) uses geotextile screening cloths to capture the normal sanding and scraping debris, as well as screws, nails, and other solid materials. This reduces cleanup time and improves appearance (EPA, 1996: *Clean Marinas—Clear Value*).

Providing sufficient waste receptacles, separating wastes into classes of recyclables, and preventing litter are all accepted practices today, and are part of customer service and environmentally friendly management at any public establishment. Marinas

generate solid waste through boat maintenance, parties and small social gatherings on boats, restaurants, and commercial activity at the marina, and the day-to-day operation of the facility (Figure 4.16). If adequate trash and solid waste disposal facilities are not available, solid waste is more likely to end up in surface waters or scattered on the marina grounds, from which it might be blown or washed into surface waters. Marina patrons and employees are more likely to properly dispose of solid wastes if given adequate opportunity and disposal facilities, and under federal law, marinas and port facilities must supply adequate and convenient waste disposal facilities for their customers.

Figure 4.16. Vacuum sanders. Employees at The Lodge of Four Seasons Marina (Missouri) use vacuum or "dustless" sanders for preparing hulls for painting, reducing waste in the environment and cleanup time (EPA, 1996: *Clean Marinas— Clear Value*).

Best Management Practices

Pollution Prevention Practices

- *Encourage marina patrons to avoid doing any debris-producing hull maintenance while their boats are in the water. When maintenance is done with the boat in the water (for small projects and where necessary), prevent debris from falling into the water.*

The quantity of debris discarded into the marina basin from boat maintenance activities can be minimized by limiting in-the-water boat maintenance to tasks that do not produce solid debris, such as propeller work and hull inspection. Dustless sanders can be used for topside work in slips, and tarps can be laid out between a boat and the dock to catch any debris.

It can be very difficult to do any hull maintenance while the boat is in the water without some debris falling into the water, and some marina managers require that all work be done on land. If feasible, limit in-the-water hull maintenance to boat cleaning, and even then, use environmentally friendly cleaners. (See the Boat Cleaning management measure).

- *Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal.*

Many people don't want to put their trash anywhere except in a trash receptacle. For these people, and to encourage those who might otherwise consider dropping trash on the ground to use trash receptacles, waste disposal facilities should be conveniently located near repair and maintenance areas, in parking lots, on docks, and in heavy-use areas, such as near grassy areas where people picnic and in parking lots. Covered trash receptacles do not fill up with water when it rains, do not lose their contents to strong winds, and are less likely to be invaded by scavenging mammals and birds. A loose cover also acts as an indicator when a receptacle is full. The best overfill prevention is frequent emptying by marina staff.

- *Provide trash receptacles at boat launch sites.*

Trash disposal can be a big problem at boat launch ramps. Boat launch sites are often the most convenient access point to waterbodies, and people from nearby areas, the non-boating public, or those not using the launch ramp for boat launching (e.g., those who use the site for picnicking, swimming, or shore fishing) deposit their trash in the receptacles provided for boaters at the site. If trash receptacles are provided at the launch site, this use may be expected, and a pick-

up schedule arranged accordingly. Some states (e.g., Maine and Minnesota) have experimented with removing trash receptacles from boat launch sites, because overflowing trash receptacles and litter strewn on the ground can result from providing trash receptacles that are insufficient to accommodate the trash from all users. Some people will leave their trash atop an overflowing trash receptacle or beside one rather than take it with them, thinking it will be picked up by someone whose job is to do so. Maine and Minnesota have found that, when this is the case, the boating public generally does not complain and complies by taking their trash with them. Litter can actually cease to be a problem after trash receptacles are removed in these instances. If it is decided not to provide trash receptacles, posting signs that ask people to "*Pack it out!*" can reduce the quantity of trash left at the site.

- *Provide facilities for collecting recyclable materials.*

Recycling of nonhazardous solid waste such as scrap metal, aluminum, glass, wood pallets, batteries, paper, and cardboard is recommended wherever feasible. Used lead-acid batteries should be stored on an impervious surface, under cover, and sent to or picked up by an approved recyclable materials handler. Often a recycling rebate, perhaps $5, is paid to the marina for each battery.

Where recycling is available through the municipality, it can be a cost-effective way to decrease trash disposal costs. Public education is necessary if a recycling program is to be effective, though today many people recycle at their homes and already have a "recycle" consciousness.

Although recycling is a preferred disposal method for reusable materials, not all municipalities provide the service free of charge. Recycling can be performed in-house, but private service providers are often costly. In such a case, the quantity of waste produced can be lessened by reusing materials and sharing leftover cleaning and maintenance supplies (e.g., excess varnish and paint) among customers. A marina can place a bulletin board up for notices from patrons about extra supplies that are available or might provide some sort of materials exchange program.

The All Seasons Marina (New Jersey) cut its trash bill in half by taking advantage of the local solid waste recycling program. The Cap Sante Boat Haven (Washington) partic-ipates in a municipal recycling program and saves 10 to 20 percent on its annual trash removal bill. The marina rents 28 recycling bins from the town and places them at dock heads for

- *Provide boaters with trash bags.*

Boaters can be encouraged to bring all of the trash they generate while boating back to an onshore trash receptacle by providing them with a plastic bag or other suitable trash container. Imprinted with a marina's logo, the bag will carry the clear message that the marina cares about the environment.

- *Use a reusable blasting medium.*

New technologies are available that make use of a plastic blast medium that can be reused several times until it wears out. The plastic blast medium is used to remove antifoulant paint and is vacuumed into a hopper with the debris for recovery, cleaning, and reclaiming (Figure 4.17). The much smaller volume of debris is collected and sent to a landfill.

Source Reduction Practices

- *Require patrons to clean up pet wastes and provide a specific dog walking area at the marina.*

Where floating piers extend far from the grassy areas of a marina, dog waste can become a problem, leading to many complaints from staff and boat owners. In many cities, dog owners are required to clean up after their pets when they walk them on public streets and parks. A similar policy can take care of this problem at marinas.

Figure 4.17. Associated Marine Technologies (Florida) took pollution prevention of hull sand-blasting debris a step further by switching from a silica wet/dry sandblasting medium to a closed system that employs a reusable plastic material. The facility uses a high-capacity plastic-medium-blasting dry stripper and a media reclaimer that recovers the plastic material and separates it from the paint dust. This process significantly reduces the cost of cleanup and disposal, gives a higher-quality surface, and is much less ag-gressive on the new gelcoats of fiberglass hulls (EPA, 1996: *Clean Marinas—Clear Value*).

BMP Summary Table 9 summarizes the BMPs for Solid Waste Management mentioned in this guidance.

BMP Summary Table 9. SOLID WASTE MANAGEMENT

MANAGEMENT MEASURE - Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

ENVIRONMENTAL CONCERNS:

Boat maintenance, painting and repair may result in a range of waste materials, such as sanding debris, antifoulant paint chips, scrap metal, fiberglass pieces, sweepings, battery lead and acid. Other solid waste such as bottles, plastic bags, aluminum cans, coffee cups, six-pack rings, disposable diapers, wrapping paper, glass bottles, cigarette filters, and fishing line can come from general boating activities and marina use. Living organisms and the habitats of aquatic animals and plants will be harmed by this type of debris after it enters the water. A litter-free marina is more attractive to present and potential customers. Reducing a marina's solid wastes also reduces overall disposal costs.

Best Management Practice Examples & Type	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
POLLUTION PREVENTION PRACTICES						
Encourage marina patrons to avoid doing any debris-producing hull maintenance while their boats are in the water. When maintenance is done with the boat in the water (for small projects and where necessary), prevent debris from falling into the water	Marina dock area - recommended	MODERATE; less debris will end up in the marina basin, improving appearance	LOW to MODERATE; any maintenance work on a boat in a slip is more likely to pollute and harder to control; reasonable attempts at cleaner practices will reduce pollution going into the water	LOW to MODERATE	LOW to MODERATE	Awkward practice especially around boat bow; not effective in wind or rain.
Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal	Marina wide - universally recommended	HIGH; convenient trash contains will be used if placed near access to docks; encourages staff and customers to help keep grounds clean	HIGH; covers control animal and bird access and prevent wind blown litter from entering the water	LOW per unit	LOW to MODERATE	Receptacle covers keep rainwater out and protect contents from strong winds; containers on docks or near the water should be secured to avoid accidental spillage; post signs to indicate what should and should not be placed in trash cans.

BMP Summary Table 9. (cont.) SOLID WASTE MANAGEMENT

Best Management Practice Examples & Type	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Provide trash receptacles at boat launch sites	Boat launch sites - universally recommended	HIGH; a litter free launch site is more attractive to boaters; encourages them to keep it clean	MODERATE; use of trash containers reduces volume of litter entering water	LOW per unit	LOW to MODERATE	Isolated public launch ramps may become household dump for residents in rural areas, a problem which has many states discouraging use of trash receptacles.
Provide facilities for collecting recyclable materials	Marina wide - universally recommended	MODERATE to HIGH; recycling decreases trash disposal costs; popular with the public; good for business image; scrap metals have highest cost recovery value	MODERATE; recycling has environmental benefits beyond the marina by reducing volume going to landfills, and as resource for manufacturers	LOW	LOW	Recycling is best done where provided through the municipality; can be costly where recycling is not commonly available; clearly mark each receptacle for different type of recyclable; boaters will be more likely to use recycling bins if they are easy to find and use.
Provide boaters with trash bags	Marina work area - generally recommended	HIGH; encourages boaters to collect their trash and not discard it overboard, in the marina or at sea; reduces time spent on cleanup at marina	HIGH; all trash collected does not go into the water or blow around the marina as litter	LOW	LOW	Most patrons won't litter, but for those who do, this can encourage them to become more environmentally friendly, at no cost to the patron.
Use a reusable blasting medium	Marina work area - generally recommended	HIGH; cost savings can result by separating out dust from reusing blasting material;	significantly reduces volume of waste for disposal	MODERATE	MODERATE	More practical and cost effective for high volume boatyards which do a lot of hull blasting.

BMP Summary Table 9. (cont.) SOLID WASTE MANAGEMENT						
Best Management Practice Examples & Type	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
SOURCE REDUCTION PRACTICES						
Require patrons to clean up pet wastes and provide a specific dog walking area at the marina	Marina wide - universally recommended	HIGH; pet waste on docks, walks and beaches is a serious complaint by marina customers; signs and use of pest waste disposal bags work and reduces complaints from other boaters; when dogs have a place to go, the docks and walks are cleaner; saves staff time cost to cleanup	HIGH; pet waste contains harmful bacteria, lowers water quality, and contaminates shellfish; reducing the possibility that it will enter the water keeps waters clean	LOW	LOW	Signs should clearly mark the dog walking area as well as encourage patrons to clean up after their pets; providing disposable scoop bags will encourage this practice and saves staff dog clean up time.